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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,518	03/17/2004	Steven C. Taylor	B-369	5445

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EXAMINER	
SAINT SURIN, JACQUES M	
ART UNIT	**PAPER NUMBER**
2856	

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/803,518	TAYLOR, STEVEN C.	
	Examiner	Art Unit	
	Jacques M. Saint-Surin	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the amendment of 09/28/05.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1, 6-8, 10, 13-16, 21, 23, 25 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dykes et al. (US Patent 5,303,591) in view of Monde et al. (US Patent 6,570,097).

Regarding claims 1, 13-16 and 28-30, Dykes discloses an ultrasonic pulser-receiver circuitry (inspection apparatus and associated for carrying out ultrasonic examinations, see: col. 2, lines 37-39); for use with an ultrasonic transducer (transducer circuitry 92, see: Fig. 3), the circuitry comprising:

a circuit board (the circuit is generally configured having a pulser network or circuit represented at the boundary line 90, a transducer circuit represented within the boundary line 92; and a receiver circuit represented within the boundary line 94, see: col. 5, lines17-21 and Fig. 3);

ultrasonic pulser circuitry (pulser network circuit 90, see: col. 5, line 22 and Fig. 3) supported by the circuit board (Fig.3) and configured to be coupled to an ultrasonic transducer (transducer 92, see: Fig. 3 and col. 5, line 23) and to cause the ultrasonic transducer to emit an ultrasonic output pulse;

receiver circuitry (receiver circuitry 94, see: col. 5, line 21) supported by the circuit board (Fig. 3), coupled to the pulser circuitry (90), including protection circuitry configured to protect against the ultrasonic pulse (blocking diodes D1 and D2 function to isolate the output network 160 during this reception interval; as the faint return signal is received, it is transmitted from the transducer 130 to line 136; typically, the signal will be in the 200 or 300 millivolt range or lower; this signal then is directed via line 162 and resistor R3 to line 164, see: col. 7, lines 45-51); and including amplifier circuitry configured to amplify an echo (receiver circuit an amplifier stage exhibiting a given noise resistance, see: col. 11, lines 10-11) received back by the transducer (92), of the output pulse. However, Dykes does not disclose or suggest a connector configured to couple the ultrasonic transducer directly to the circuit board, to the pulser circuitry and receiver circuitry, wherein impedance mismatches that would result if the transducer was coupled to the circuit board via a cable can be avoided. Monde discloses a connector is mounted directly to a substrate or of the type where it is connected to a cable, see: col. 5, lines 64-66. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the circuit of Dykes for utilizing the connector of Monde as taught above because the connector can be used for various applications between a plurality of circuit boards, interconnection between a plurality of devices, interconnection between connectors and circuit boards, interconnection between connectors and integrated circuits sockets such as CPU sockets, thereby ensuring the impedance matching in a reliable manner.

Regarding claim 16, it is similar in scope with claim 1 and therefore is rejected for the reasons set forth for that claim. Furthermore, Dykes discloses the circuit has an input network for receiving an excitation drive signal to excite the transducer and an output network for providing a response signal (col. 3, lines13-16); upon the application of a trigger signal to terminals 116 and 118, SCR 104 is gated into conduction and capacitor C1 discharges through the primary winding 108 of the pulser transformer 126 to ground A with a large negative pulse, see: col. 5, lines 30-33).

Regarding claims 6, 8, 10, 21, 23 and 25, Dykes discloses at about 0.2 microseconds, there is seen to occur a current starvation whereupon, as represented at waveform component 148 extending substantially between 0.2 microseconds and 5 microseconds, see: col. 7, lines 1-3.

Regarding claims 13-15 and 28-30, Dykes discloses the circuit is generally configured having a pulser network or circuit represented at the boundary line 90, a transducer circuit represented within the boundary line 92; and a receiver circuit represented within the boundary line 94, see: col. 5, lines17-21 and Fig. 3.

4. Claims 2, 4-5, 9, 17, 19-20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dykes et al. (US Patent 5,303,591) in view of Monde et al. (US Patent 6,570,097) and further in view of Cobb (US Patent 5,473,934).

Regarding claims 2, 4-5, 9, 17, 19-20 and 24, Dykes discloses the pulse amplitude is in the range of 5 to 500 volts, preferably with a rise-time between 5 and 50 nanoseconds, see: col. 5, lines 53-55. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Dykes the pulser of Cobb

because the pulser would perform effectively with the above rise time thereby ensuring the efficacity of the pulse wave during the fall time.

5. Claims 3 and18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dykes et al. (US Patent 5,303,591) in view of Monde et al. (US Patent 6,570,097) and further in view of Amodei (US Patent 3,201,612).

Regarding claims 3 and 18, Dykes does not disclose a rise time less than 1 nanosecond. Amodei discloses this abrupt voltage change occurs iii an interval which is less than one nanosecond and the output pulse 40 exhibits a fast rise time, see: col. 3, lines 54-58. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Dykes in view of Monde the techniques of Amodei because after the time t2, the shape and amplitude of the output voltage pulse follows the instantaneous amplitude of the applied voltage thereby making the pulse exhibits a slow fall time in an efficient manner.

6. Claims 7 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dykes et al. (US Patent 5,303,591) in view of Monde et al. (US Patent 6,570,097) and further in view of MacLauchlan et al. (US Patent 5,526,213).

Regarding claims 7 and 22, the combination of Dykes and Monde does not disclose a pulser-receiver wherein no transducer delay-line is required. MacLauchlan discloses EMATS are the basis of a noncontact ultrasonic inspection that require no fluid couplant, see: col. 1, lines 32-33. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in the combination of Dykes

and Monde the EMAT of Maclauchlan because the sound is produce by an electromagnetic interaction within the material in a reliable manner.

7. Claims 11-12, 26-27 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dykes et al. (US Patent 5,303,591) in view of Monde et al. (US Patent 6,570,097) and further in view of in view of further in view of Landry et al. US Patent 5,108,693).

Regarding claims 11-12 and 26-27, the combination of Dykes and Amodei does not disclose a depth of field in inches less than 0.005 inch and 0.136 inch. Landry discloses the transducer may be operated at a frequency of 50 MHz with a focal length of 0.5 inches and an aperture in the range of 0.19 to 0.25 inches. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the combination of Dykes and Monde for utilizing the techniques of Landry since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claim 44, it is similar in scope with claim 1/3/4/6/12 and therefore, it is rejected for the reasons set forth for that claim.

8. Claims 31, 34, 36, 38 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dykes et al. (US Patent 5,303,591) in view of Amodei (US Patent 3,201,612).

Regarding claim 31, it is similar in scope with claim 1 and therefore is rejected for the reasons set forth for that claim. Howeve, Dykes does not disclose a rise time less

than 1 nanosecond. Amodei discloses this abrupt voltage change occurs iii an interval which is less than one nanosecond and the output pulse 40 exhibits a fast rise time, see: col. 3, lines 54-58. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Dykes the techniques of Amodei because after the time t2, the shape and amplitude of the output voltage pulse follows the instantaneous amplitude of the applied voltage thereby making the pulse exhibits a slow fall time in an efficient manner.

Regarding claims 34, 36 and 38, Regarding claims 6, 10, 21 and 25, Dykes discloses at about 0.2 microseconds, there is seen to occur a current starvation whereupon, as represented at waveform component 148 extending substantially between 0.2 microseconds and 5 microseconds, see: col. 7, lines 1-3.

Regarding claims 41-43, Dykes discloses the circuit is generally configured having a pulser network or circuit represented at the boundary line 90, a transducer circuit represented within the boundary line 92; and a receiver circuit represented within the boundary line 94, see: col. 5, lines17-21 and Fig. 3.

9. Claims 32-33 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dykes et al. (US Patent 5,303,591) in view of Amodei (US Patent 3,201,612) and further in view of Cobb (US Patent 5,473,934).

Regarding claims 32-33 and 37, Dykes discloses the pulse amplitude is in the range of 5 to 500 volts, preferably with a rise-time between 5 and 50 nanoseconds, see: col. 5, lines 53-55. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Dykes and Amodei the pulser of Cobb

because the pulser would perform effectively with the above rise time thereby ensuring the efficacity of the pulse wave during the fall time.

10. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dykes et al. (US Patent 5,303,591) in view of Amodei (US Patent 3,201,612) and further in view of in view of further in view of MacLauchlan et al. (US Patent 5,526,213).

Regarding claims 35, the combination of Dykes and Monde does not disclose a pulser-receiver wherein no transducer delay-line is required. MacLauchlan discloses EMATS are the basis of a noncontact ultrasonic inspection that require no fluid couplant, see: col. 1, lines 32-33. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in the combination of Dykes and Amodei the EMAT of Maclauchlan because the sound is produce by an electromagnetic interaction within the material in a reliable manner.

11. Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dykes et al. (US Patent 5,303,591) in view of Amodei (US Patent 3,201,612) and further in view of in view of further in view of Landry et al. US Patent 5,108,693).

Regarding claims 39-40, the combination of Dykes and Amodei does not disclose a depth of field in inches less than 0.005 inch and 0.136 inch. Landry discloses the transducer may be operated at a frequency of 50 MHz with a focal length of 0.5 inches and an aperture in the range of 0.19 to 0.25 inches.It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the combination of Dykes and Amadei for utilizing the techniques of Landry since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the

optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Response to Arguments

12. Applicant's arguments filed 09/28/05 have been fully considered but they are not persuasive.

13. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Dykes ('5,495,765) discloses the claimed invention except the connector configured to couple the ultrasonic transducer directly to the circuit board.....avoided. In addition Monde (6,570,097) discloses a connector suitable for high-speed signal circuits in which crosstalk is inhibited and impedance matching can easily be established. As discussed above, the connector of Monde can be used for various applications such as interconnection between connectors and circuit boards, connectors and integrated circuits. The Examiner believes that one of the ordinary skill art would be motivated to recognized how to modify the teaching of Dykes for utilizing the connector of Monde in which impedance matching can be easily established.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques M. Saint-Surin whose telephone number is (571) 272-2206. The examiner can normally be reached on Mondays through Fridays 10:30 A.M. -7:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272 2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jacques M. Saint-Surin
December 19, 2005

HEZRON WILLIAMS
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